

NOVEMBER/DECEMBER 2025

23UBT21 — GENETICS

Time : Three hours

Maximum : 75 marks

SECTION A — (10 × 2 = 20 marks)

Answer ALL questions.



1. What is concealment? Give an example.
2. What are the different blood groups involved in ABO system?
3. What is sexual heredity? Give an example.
4. What is the significance of crossing over?
5. Define fusion of bacteria.
6. What is the transformative principle of Griffiths experiment?
7. How to diagnose Down syndrome by karyotype method?
8. What is a pedigree chart?

9. Define expressive nature. How does it affect phenotype expression?
10. Define genotype frequency. How does it differ from genetic frequency?

SECTION B — (5 × 5 = 25 marks)

Answer ALL questions.

11. (a) What are deadly genes? Explain how they affect gene inheritance with examples.

Or

- (b) What are Mendel's laws of inheritance? Explain each law briefly with examples.

12. (a) How does sex determination take place in human beings?

Or

- (b) What is chromosomal mapping? How is it used to determine the distance between genes?

13. (a) Describe the microstructure of a gene and explain the modern gene theory.

Or

- (b) What is transduction? Explain its types and importance in bacterial genetics.

14. (a) How is karyotyping used to diagnose genetic disorders?

Or

- (b) What are mutation inducers? Classify them with examples.

15. (a) State and explain the Hardy-Weinberg principle. What are its main assumptions?

Or

- (b) What is the role of mutation and natural selection in changing the gene frequency?

SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. What is incomplete dominance and compound dominance? Explain with examples.

17. Explain Morgans experiments on bonding in *Drosophila* with their significance.

18. Compare fusion, transformation and transduction in bacterial recombination.

19. Explain the DNA repair procedures involved in maintaining genetic integrity.

20. Explain the concepts of eugenics, euphenics and euthenics. How do they differ from each other?

